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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/912,278

07/24/2001

Amir Said

1006298-1

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7590

02/01/2005

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

LAROSE, COLIN M

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,278

Applicant(s)

SAID, AMIR

Examiner

Colin M. LaRose

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-8, 11-16, 19-22 and 25-30 is/are rejected.
7) ☒ Claim(s) 9, 10, 17, 18, 23 and 24 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0904.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Declaration under 37 CFR 1.131

1. The facts pertaining to Applicant's Declaration under 37 CFR 1.131 filed 14 September 2004 ("Declaration") are as follows:

- a) The present invention has an effective filing date of **24 July 2001**.
- b) The Manduca reference has an effective 102(e) date of **16 October 2000**.
- c) Applicant's Declaration under CFR 1.131 establishes that the present invention was conceived in **September 1999**, according to the submitted technical report.
- d) Applicant's Declaration also establishes that an "Invention Disclosure" document was submitted by the inventor to the intellectual property department of the Assignee on **4 August 2000**.

According to MPEP § 715.07(III), Applicant can antedate the Manduca reference's effective date of 16 October 2000 by providing evidence to show either:

- (1) an actual reduction to practice of the invention before 16 October 2000; or
- (2) conception coupled with diligence from just before 16 October 2000 to an actual reduction to practice; or
- (3) conception coupled with diligence from just before 16 October 2000 to a constructive reduction to practice.

The Declaration has been considered but is ineffective to overcome the Manduca reference for the following reasons:

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2. The evidence submitted is insufficient to establish applicant's alleged actual reduction to practice of the invention in this country or a NAFTA or WTO member country.

On page 7 of Applicant's Remarks dated 14 September 2004 ("Remarks"), Applicant states, "[t]he invention disclosure and the technical report indicate that the invention of claims 1, 11 and 19 was actually reduced to practice in September of 1999." According to MPEP § 715.07(III), "proof of actual reduction to practice requires a showing that the apparatus actually existed and worked for its intended purpose." (emphasis added)

Applicant has not shown that the apparatus corresponding to the present invention actually existed. Rather, the Declaration merely establishes that the present invention was conceived in September of 1999. No submission of an apparatus, device, computer program, or other evidence that supports the assertion that the invention was actually reduced to practice has been received.

The Invention Disclosure document suggests that a software program or device called "Blade," which may have embodied the invention, was created prior to the effective date of the Manduca reference, however, Applicant has provided no additional evidence to conclusively show that the program or device was an actual reduction to practice of the present invention.

The Declaration lacks sufficient evidence to show an actual reduction to practice, so situations (1) and (2) are ruled out. Since conception in September 1999 has been established, Applicant must show due diligence from before 16 October 2000 until the constructive reduction to practice on the date of 24 July 2001, which is the filing date of the present application.

See MPEP § 2138.05 for more details on the reduction to practice requirement.

3. The evidence submitted is insufficient to establish diligence from a date prior to the 102(e) date of the Manduca reference to a constructive reduction to practice.

The filing of a patent application is perceived as a constructive reduction to practice and is typically utilized in lieu of an actual reduction to practice for examination purposes. In spite of Applicant's assertion of an actual reduction to practice, Applicant also appears to rely on a constructive reduction to practice. On page 8 of the Remarks, Applicant states, "[d]iligence was exercised between conception of the invention of claims 1, 11 and 19 and a constructive reduction to practice (the filing of the application). The invention disclosure was submitted to the legal department of Hewlett-Packard, and an application was filed less than a year after the invention disclosed was submitted."

According to MPEP § 715.07(a), "it is not enough merely to allege that applicant or patent owner had been diligent... [r]ather, applicant must show evidence of facts establishing diligence." Since Applicant has merely alleged, and not shown, diligence, the Declaration does not meet the requirements for establishing diligence. The Declaration provides no evidence supporting an assertion of diligence from just before the effective date of the Manduca reference to the filing of the present application. Thus, situation (3) above is not met, and the Declaration is considered insufficient for antedating the Manduca reference.

See MPEP § 2138.06 for more information on the diligence requirement

Arguments and Amendments

4. Applicant's amendments filed 14 September 2004, have been entered and made of record.

Claim Objections

5. Claim 23 is objected to because of the following informalities: the claim identifier is incorrect. It should be labeled as -- New --. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 11, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,329,819 by Manduca et al. ("Manduca").

Regarding claim 1, Manduca discloses a method for detecting an edge in a digital image block, the method comprising determining an entropy of pixel (luminance) differences in the block (column 5, line 43 through column 6, line 10: equation 2 computes the entropy of pixel gradients for an image block, with the entropy indicating the presence and lucidity of edges within the block).

Regarding claims 11 and 19, Manduca discloses the apparatus and article for the corresponding method of claim 1 (see figure 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2, 12, 25, and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manduca in view of U.S. Patent 5,271,064 by Dhawan et al. ("Dhawan").

Regarding claims 2, 12, 25, and 28, Manduca discloses a method for detecting an edge in a digital image block, the method comprising determining an entropy of pixel (luminance) differences in the block, as established for claim 1.

Manduca is silent to creating an histogram of the pixel luminance differences, and then computing the entropy from the histogram.

Dhawan discloses a system for smoothing regions and enhancing edges in gray scale images. In particular, Dhawan discloses computing the entropy of a local area, and then using the entropy calculation to determine when to terminate enhancement. As shown in figure 8, local contrast vectors (i.e. gradients) are compiled into a contrast histogram, and then the entropy of the local area is calculated using the contrast histogram.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Manduca by Dhawan to achieve the claimed invention since Dhawan shows that

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computing the entropy of a local area is conventionally realized by creating an histogram of gradients and then computing the entropy from the histogram.

Regarding claims 29 and 30, Manduca discloses a processor and article for the corresponding method of claim 28 (see figure 1).

10. Claims 5-8 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manduca in view of U.S. Patent 5,377,018 by Rafferty.

Regarding claims 5 and 20, Manduca is silent to determining the maximum pixel difference in the block (and using the maximum difference to determine whether the block contains an edge).

Rafferty discloses an image processing system that employs a routine to determine whether an edge is present in an image block (figure 6A). In particular, Rafferty discloses computing a maximum pixel difference in the block (70) in order to determine whether the block contains an edge (74,76).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Manduca by Rafferty to determine the maximum pixel difference (and to use the maximum difference to determine whether the block has an edge), as claimed, since Manduca is concerned with ascertaining the quality of edges within image blocks (column 5, lines 48-65), Rafferty shows that the actual presence of edges within a block is determined by comparing the maximum pixel difference to a threshold (figure 6A), and the maximum pixel difference denotes how much variation, or entropy, is present in the block (column 3, lines 15-24).

Regarding claim 6, Rafferty discloses comparing the maximum pixel difference to a threshold to determine whether the block contains an edge (70, figure 6A), and Manduca discloses comparing the entropy to a tolerance level to determine whether the edge is present and is of suitable quality.

Regarding claims 7 and 21, Rafferty teaches that a high maximum difference corresponds to a block with edges (70 and 76, figure 6A), and Manduca teaches that sharp edges are characterized by low entropy (column 5, lines 50-59).

Regarding claims 8 and 22, Rafferty teaches that a block is identified as not having an edge if the maximum difference is zero (according to blocks 70-76, figure 6A, the maximum difference must be at least greater than zero for the block to contain an edge).

11. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manduca in view of Dhawan, as applied to claim 12 above, and further in view of Rafferty.

Regarding claims 14, Manduca is silent to determining the maximum pixel difference in the block (and using the maximum difference to determine whether the block contains an edge).

Rafferty discloses an image processing system that employs a routine to determine whether an edge is present in an image block (figure 6A). In particular, Rafferty discloses computing a maximum pixel difference in the block (70) in order to determine whether the block contains an edge (74,76).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Manduca and Dhawan by Rafferty to determine the maximum pixel difference (and to use the maximum difference to determine whether the block has an edge), as claimed, since

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Manduca is concerned with ascertaining the quality of edges within image blocks (column 5, lines 48-65), Rafferty shows that the actual presence of edges within a block is determined by comparing the maximum pixel difference to a threshold (figure 6A), and the maximum pixel difference denotes how much variation, or entropy, is present in the block (column 3, lines 15-24).

Regarding claim 15, Rafferty discloses comparing the maximum pixel difference to a threshold to determine whether the block contains an edge (70, figure 6A), and Manduca discloses comparing the entropy to a tolerance level to determine whether the edge is present and is of suitable quality.

Regarding claim 16, Rafferty teaches that a high maximum difference corresponds to a block with edges (70 and 76, figure 6A), and Manduca teaches that sharp edges are characterized by low entropy (column 5, lines 50-59).

12. Claims 3, 13, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manduca in view of Dhawan as applied to claims 2, 12, and 25 above, and further in view of U.S. Patent 5,481,620 by Vaidyanathan.

Regarding claims 3 and 13, Manduca and Dhawan are silent to utilizing a look-up table to store the entropy of the histogram, as claimed.

Vaidyanathan discloses an image processing system wherein entropy values of an histogram are calculated (B, figure 2), and then the entropy values are stored in a look-up table (C, figure 2). Vaidyanathan teaches that storing the values in a look-up table allows a simple look-up operation to be performed in lieu of subsequent re-calculations (column 6, lines 61-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Manduca and Dhawan by Vaidyanathan to achieve the claimed invention by pre-computing the bin entropies of the histogram for storage in a look-up table and then utilizing the look-up table to determine the entropy of the histogram, as claimed, since Vaidyanathan teaches that storing the pre-computed entropy values in a look-up table negates the need to re-calculate the entropy values for each bin and allows for easy access of the entropy values.

13. Claims 4 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manduca in view of Dhawan and Vaidyanathan as applied to claims 3 and 26 above, and further in view of U.S. Patent 5,594,807 by Liu.

Regarding claims 4 and 27, Vaidyanathan is silent to scaling or rounding the numbers in the look-up table to integers. Liu discloses truncating or rounding numbers to be stored in a look-up table to integers, since it eases pre-computation and storage of the values (column 12, lines 1-5). At the time the invention was made, rounding numbers to be stored would have been an obvious expedient for the purposes of reducing the size of the table to be stored.

Allowable Subject Matter

14. Claims 9, 10, 17, 18, 23, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if rewritten to overcome the above claim objections.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,184,682 by Ehman et al. is closely related to the Manduca reference and discloses Manduca's equation for calculating the entropy of pixel differences; see equations 7 and 8

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia

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Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.

CML

Group Art Unit 2623

25 January 2005



VIKRAM BALI
PRIMARY EXAMINER